



September 29, 2017

Mr. Anthony Krone
Risk Manager
Shelby County Schools
160 South Hollywood – Room 152
Memphis, Tennessee 38112

**RE: Lead in Drinking Water Post-Flush Sampling
Whitehaven Elementary School
4851 Elvis Presley Boulevard
Memphis, Tennessee
Tioga Project No.: 24816.02**

Dear Mr. Krone,

At the request of Shelby County Schools (the Client), Tioga Environmental Consultants (Tioga) performed sampling of drinking water sources at Whitehaven Elementary School for laboratory analysis of total lead concentrations.

As first-draw sampling of drinking water sources at this school on September 12th, 2017 revealed the potential for elevated lead levels in the potable water system, Tioga recommended additional sampling of all water fountains in the school to determine the extent of the issue. Following the receipt of the laboratory analytical results from the initial sampling event, Tioga informed Shelby County Schools Risk Management personnel, who instructed maintenance personnel to take the water fountains at this school out of service pending further testing. Prior to this post-flush sampling event, the water fountains throughout the school had been shut off for multiple weeks.

Initial flush sampling of refrigerated water fountains identified during the previous first-draw sampling as having elevated lead levels in the drinking water was conducted on the evening of September 25th, 2017. Prior to sample collection, these refrigerated water fountains were flushed for 15 minutes in order to completely drain the internal holding tanks and obtain samples of water from the lines feeding the fountains.

On September 26th, 2017, all non-refrigerated water sources identified during the first draw sampling event were sampled to obtain samples from the lines feeding the fountains. Additionally, first draw samples were collected from the refrigerated water fountains sampled the night before, to evaluate the water that was stored in the unit overnight. Sampling was conducted early in the morning, before any potable water sources had been used for the day and prior to the arrival of any students or faculty. Maintenance personnel reactivated the water fountains prior to sampling, and the fountains were flushed for 30 seconds before sample collection, and the water fountains were deactivated and taken out of service immediately.

Down-to-earth partners. Sky's-the-limit solutions.

following the sampling. One additional sample was also collected from the supply at the point of entry to the building. This line was also flushed for 30 seconds prior to sample collection.

The EPA has established an action level for public water supply systems at 15 micrograms of lead per liter of water (15 µg/L). Further, EPA recommends that schools remove water fountains and other outlets used for consumption if lead levels exceed 20 µg/L. Though this school uses water from the municipal water supply and therefore does not qualify as a public water supply system, Tioga recommends that the more conservative EPA action level of 15 µg/L be used in the decision making process as to the continued operation of the potable water sources at the school.

Results Based on Laboratory Analysis:

Table 1 on the following page summarizes the sampling locations, laboratory analytical results, and EPA action level for lead in drinking water. Sample results with a "<" symbol did not contain lead content above the laboratory detection limit. Samples highlighted in yellow exceeded the EPA action level for lead. A dash indicates that a sample was not collected. This table includes results from both the first draw sampling performed on September 12, 2017 and the follow-up flush sampling performed on September 25 and 26.

Table 1
Summary of Analytical Results - Whitehaven Elementary School

Sample ID	Sample Location	First Draw Sampling Lead (9/12/2017) (µg/L)	Post 15-Minute Flush Sampling Lead (µg/L)	Post 30-Second Flush Sampling Lead (µg/L)	EPA Action Level (µg/L)
34-1	Water Fountain Across from Room 121 (Bubbler)	32.3	-	<0.500	15
34-2	Water Fountain Near Bookstore – Left	5.96	-	-	
34-3	Water Fountain Near Bookstore – Right	6.69	-	-	
34-4	Water Fountain Across from Room 116 - Left	<0.513	-	-	
34-5	Water Fountain Across from Room 116 – Right	<0.513	-	-	
34-6	Water Fountain Across from Room 122 (Bubbler)	58.2	-	15.5	
34-7	Water Fountain Across from Room 119 (Bubbler)	232	-	14.1	
34-8	Cafeteria Water Fountain - Left	11.8	-	-	
34-9	Cafeteria Water Fountain – Right	22.1	<0.500	0.917*	
34-10	Cafeteria Big Sink	1.34	-	-	
34-11	Cafeteria Small Sink	27.0	-	<0.500	
34-12	Second Floor Teacher's Lounge Sink	<0.513	-	-	
34-13	Water Fountain Across from Room 212 - Left	<0.513	-	-	
34-14	Water Fountain Across from Room 212 - Right	<0.513	-	-	
34-15	Water Fountain Across from Room 214 - Left	<0.513	-	-	
34-16	Water Fountain Across from Room 214 - Right	<0.513	-	-	
34-SL	Supply Line at Building Entry	-	-	2.65	

(µg/L) = Micrograms of lead per liter of water (parts per billion)

- = Not Sampled

* These samples were collected as a first draw on refrigerated water fountains

A review of the laboratory analytical results of the water samples collected during the post-flush sampling revealed one sample with total lead concentrations above the EPA action level for drinking water. The sample collected from the supply line at the point of entry to the building was below the EPA action level for lead.

Recommendations:

Based upon the laboratory analytical results of the potable water samples collected from Whitehaven Elementary School, Tioga recommends that the water source identified in the table above that exceeded the EPA action level during the Post 30-Second Flush Sampling event be removed from service and the associated water supply line capped, as post-flush sampling results indicate a source of lead contamination in the immediate water supply system for this fountain. Any water fountain built or installed before 1988 has a greater potential for containing lead piping, lead based parts and materials, and/or lead based solder. Particular care in the flushing, monitoring, and maintenance of these water fountains should be taken due to the lack of regulation concerning lead containing materials used during water fountain construction, installation, and maintenance.

The EPA provides technical guidance for reducing lead in drinking water in schools published in the October 2006 revision of the “3Ts for Reducing Lead in Drinking Water in Schools”. Tioga recommends that a plan be developed and implemented in accordance with this guidance for flushing of potable water sources not subject to removal with elevated lead levels in first-draw samples, especially following extended periods of non-use such as weekends, holidays, and breaks.

Limitations

Potable water sources with elevated lead levels may potentially be present in areas of the property that are not addressed with this report. This investigation only included the potable water sources specifically addressed.

We appreciate the opportunity to provide you with this service. Should you have any questions regarding this report, please contact me at (901) 791-2432.

Sincerely,

TIOGA ENVIRONMENTAL CONSULTANTS, INC.



Margaret F. Strom, QEP, CHMM
President

Enclosure: (1) Laboratory Analytical Report

9/28/2017

Tioga Environmental Consultants
Mr. Eric Davis
357 North Main Street
Memphis, TN, 38103

Ref: Analytical Testing
Lab Report Number: 17-269-0298
Client Project Description: 34 - Flush
Memphis, TN
Project #24816.02

Dear Mr. Eric Davis:

Waypoint Analytical, Inc. received sample(s) on 9/26/2017 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2012) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Randell H. Thomas

Randy Thomas
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

Alabama #40750	Louisiana #04015	VA NELAP #460181	Texas #T104704180-11-6	Arkansas #88-0650
Mississippi	California #2904	NC #415	Oklahoma #9311	Virginia #00106
Kentucky #90047	Tennessee #TN02027	EPA #TN00012	Kentucky UST #41	



06510

Tioga Environmental Consultants
Mr. Eric Davis
357 North Main Street
Memphis , TN 38103

Project 34 - Flush
Information : Memphis, TN
Project #24816.02

Report Date : 9/28/2017

Report Number : **17-269-0298**

REPORT OF ANALYSIS

Received : 9/26/2017

Lab No : **96853**

Sample ID : **34-9-F**

Matrix: **Aqueous**

Sampled: **9/25/2017 17:30**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.500	µg/L	0.500	1	09/27/17 21:28	CCR	EPA-200.8

Lab No : **96854**

Sample ID : **34-1-F2**

Matrix: **Aqueous**

Sampled: **9/26/2017 6:00**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.500	µg/L	0.500	1	09/27/17 21:30	CCR	EPA-200.8

Lab No : **96855**

Sample ID : **34-6-F2**

Matrix: **Aqueous**

Sampled: **9/26/2017 6:05**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	15.5	µg/L	0.500	1	09/27/17 21:31	CCR	EPA-200.8

Lab No : **96856**

Sample ID : **34-7-F2**

Matrix: **Aqueous**

Sampled: **9/26/2017 6:10**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	14.1	µg/L	0.500	1	09/27/17 21:32	CCR	EPA-200.8

Qualifiers/ Definitions

DF Dilution Factor

MQL Method Quantitation Limit

06510

Tioga Environmental Consultants

Mr. Eric Davis

357 North Main Street

Memphis , TN 38103

Project 34 - Flush

Information : Memphis, TN

Project #24816.02

Report Date : 9/28/2017

Report Number : **17-269-0298**

REPORT OF ANALYSIS

Received : 9/26/2017

Lab No : **96857**

Sample ID : **34-9-F2**

Matrix: **Aqueous**

Sampled: **9/26/2017 5:48**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	0.917	µg/L	0.500	1	09/27/17 21:37	CCR	EPA-200.8

Lab No : **96858**

Sample ID : **34-11-F2**

Matrix: **Aqueous**

Sampled: **9/26/2017 5:45**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	<0.500	µg/L	0.500	1	09/27/17 21:39	CCR	EPA-200.8

Lab No : **96859**

Sample ID : **34-SL**

Matrix: **Aqueous**

Sampled: **9/26/2017 5:55**

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
Total Lead	2.65	µg/L	0.500	1	09/27/17 21:40	CCR	EPA-200.8

Qualifiers/ Definitions

DF

Dilution Factor

MQL

Method Quantitation Limit

Cooler Receipt Form

Customer Number: **06510**

Customer Name: **Tioga Environmental Consultants**

Report Number: **17-269-0298**

Shipping Method

<input type="radio"/> Fed Ex	<input type="radio"/> US Postal	<input type="radio"/> Lab	<input type="radio"/> Other :	<input type="text"/>
<input type="radio"/> UPS	<input checked="" type="radio"/> Client	<input type="radio"/> Courier	Thermometer ID:	<input type="text" value="NA"/>

Shipping container/cooler uncompromised?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Number of coolers received	<input type="text" value="1"/>		
Custody seals intact on shipping container/cooler?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Custody seals intact on sample bottles?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Chain of Custody (COC) present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC properly completed	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Samples in proper containers?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sample containers intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sufficient sample volume for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
All samples received within holding time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler temperature in compliance?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Water - Sample containers properly preserved	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A
Water - VOA vials free of headspace	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Trip Blanks received with VOAs	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Soil VOA method 5035 – compliance criteria met	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
<input type="checkbox"/> High concentration container (48 hr)	<input type="checkbox"/> Low concentration EnCore samplers (48 hr)		
<input type="checkbox"/> High concentration pre-weighed (methanol -14 d)	<input type="checkbox"/> Low conc pre-weighed vials (Sod Bis -14 d)		
Special precautions or instructions included?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Comments:

Signature:

Date & Time:



Kit ID:	0000085992
Initiated By:	Andy Parrish
Initiated Date:	9/8/2017
Project Comment	

CHAIN-OF-CUSTODY



Tioqa Environmental Consultants
34 - Flush

17-269-0298
06510
09-26-2017
15:11:59

Company Name Tioqa Environmental Consultants		Company Number 06510		Client Project Manager/Contact <i>Eric Davis</i> Mr. Luke Hall		Purchase Order Number	
Site Name <i>34 Flush</i>		Project Number <i>24816.02</i>		<input checked="" type="checkbox"/> RUSH - Additional charges apply <input type="checkbox"/> Special Detection Limits(s) Date Results Needed		Method of Shipment <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Courier <input type="checkbox"/> Client Drop Off Other	
LIMS Project ID		Project Manager Phone # (901) 791-2432		Project Manager Email <i>edavis@togaenv.com</i> <i>lhall@togaenv.com</i>		Site/Facility ID #	

Date	Time	Sample ID	Matrix	Grab/Comp	# of Cont	Container Type	Preservation	Analyses
9/25/17	1730	34-9-F	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/26/17	0600	34-7-F2	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/26/17	0605	34-6-F2	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/26/17	0610	34-7-F2	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/26/17	0548	34-9-F2	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/26/17	0545	34-11-F2	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
9/26/17	0555	34-9L	Aqueous	6	1	Plastic - Pint	NONE	Total Lead/DW
			Aqueous		1	Plastic - Pint	NONE	Total Lead/DW

For Laboratory Use Only			Sampled by (Name - Print)		Client Remarks/Comments				
Ice	Custody Seals	Lab Comments	<i>Eric Davis</i>		<i>Rush 24 Hr TAT</i>				
<i>Y/N</i>	<i>Y/N</i>		Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
			<i>[Signature]</i>		<i>9/26/17</i>	<i>1128</i>	<i>[Signature]</i>	<i>9/26/17</i>	<i>1128</i>
			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
Blank/Cooler Temp			<i>[Signature]</i>		<i>9/26/17</i>	<i>1240</i>			
<i>N/A</i>			Relinquished by: (SIGNATURE)		Date	Time	Received by: (SIGNATURE)	Date	Time
							<i>[Signature]</i>	<i>9/26/17</i>	<i>12:40</i>